

# San Francisco Bay Delta Estuary



# Region 9 Team

- Karen Schwinn (Associate Director)
- Tom Hagler (attorney)
- Carolyn Yale (lead staff person)
- Bruce Herbold (biologist)
- Sam Ziegler (Watersheds Office mgr)
- Plus various staff from our wetlands, permitting, drinking water, and TMDL programs on specific issues

# Briefing Outline

- Setting
- Significance of estuary
- Issues
- History and EPA's role
- EPA's goals
- Current opportunities



# Goals

- Promote sustainable water management and a healthy ecosystem
- Fix Delta plumbing
- Work with State to aggressively address water quality issues
- + Pursue authorized program for Estuary

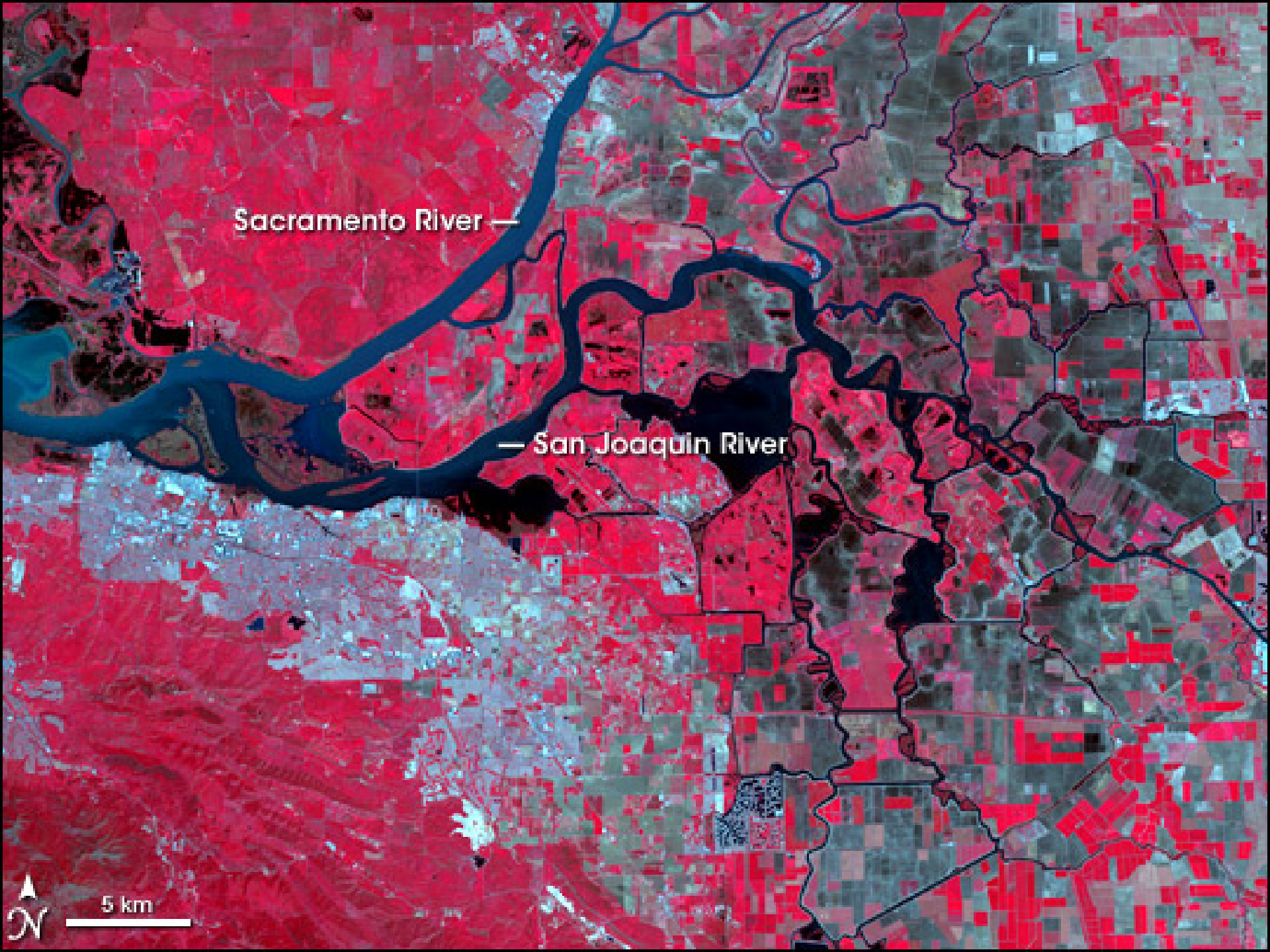




# Sacramento-San Joaquin Delta







Sacramento River —

— San Joaquin River



5 km

# Sacramento-San Joaquin Delta

**Legal Delta and Zones**

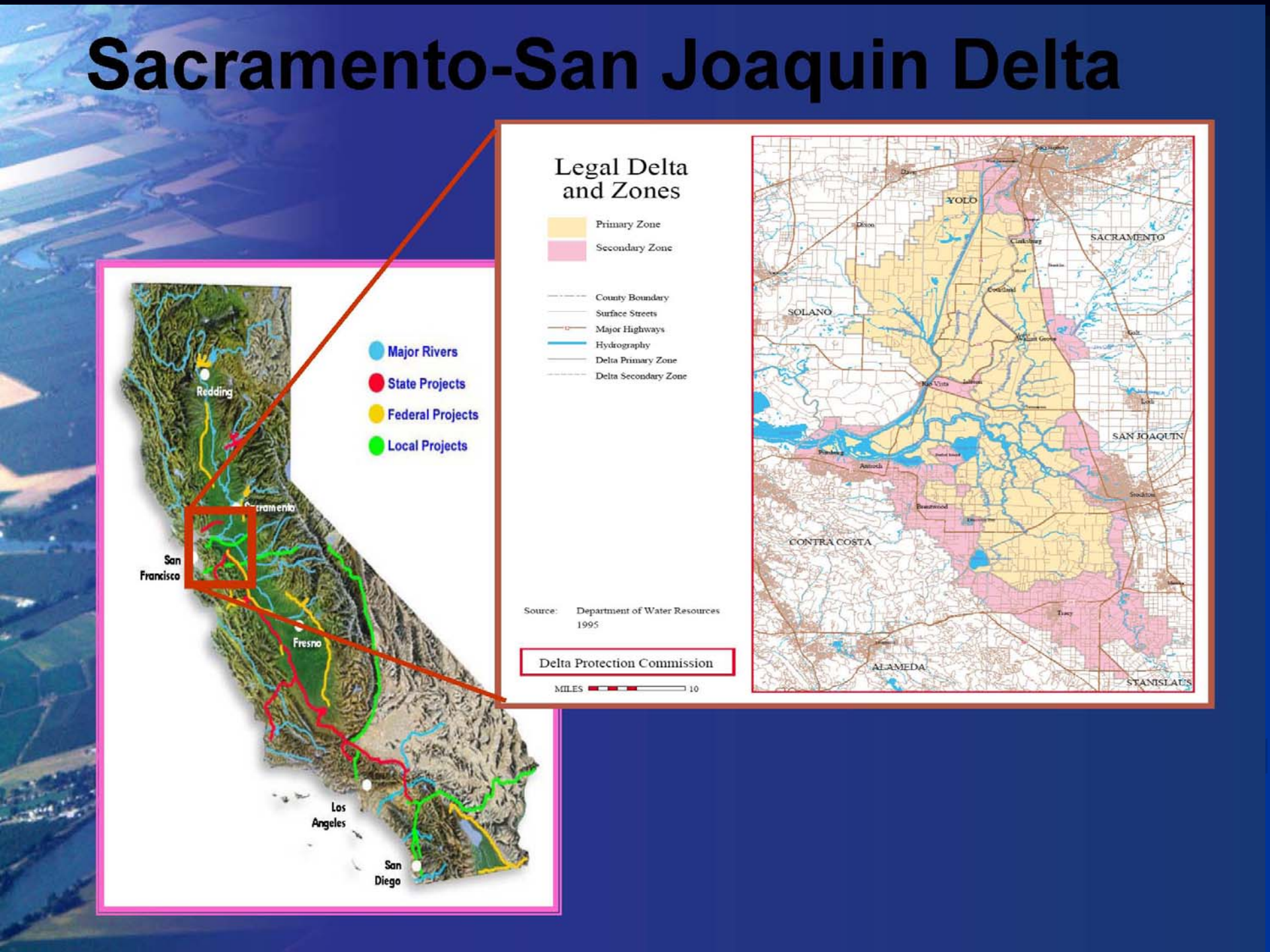
- Primary Zone
- Secondary Zone
- County Boundary
- Surface Streets
- Major Highways
- Hydrography
- Delta Primary Zone
- Delta Secondary Zone

Source: Department of Water Resources 1995

**Delta Protection Commission**

MILES 10

**Map Labels:** Redding, Sacramento, San Francisco, Fresno, Los Angeles, San Diego, YOLO, SOLANO, SACRAMENTO, CONTRA COSTA, ALAMEDA, SAN JOAQUIN, STANISLAUS.



Primary Zone

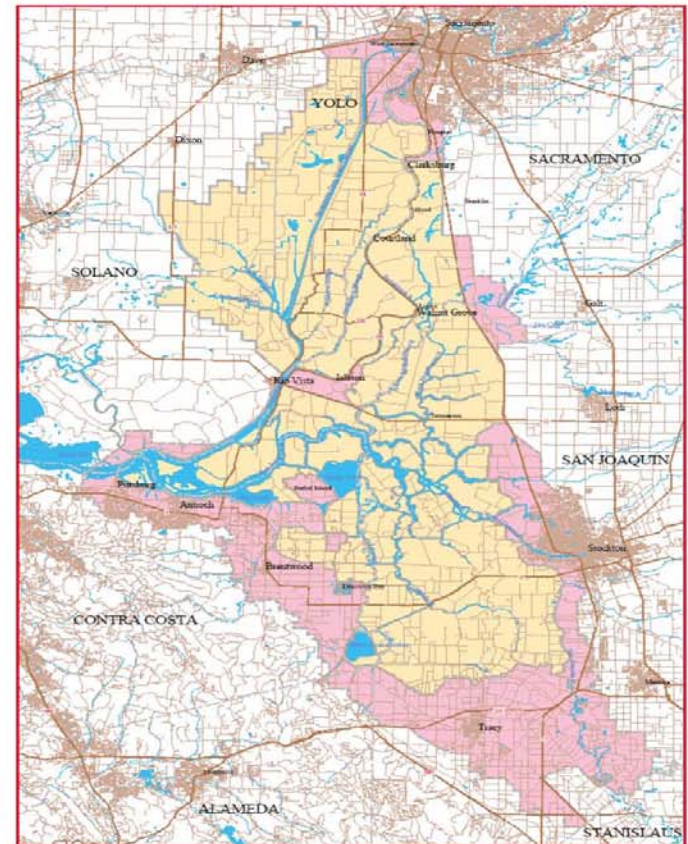
Secondary Zone



Source: Department of Water Resources  
1995

Delta Protection Commission

MILES  10





# Why is the Delta important?

- Largest West Coast estuary
- Habitat for 700 species
- 2/3 of Californian's rely on Delta water
- Irrigation for 45% of the nation's fruits and vegetables
- 160,000 homes
- 2 ports; 3 railroads; other infrastructure
- Recreation

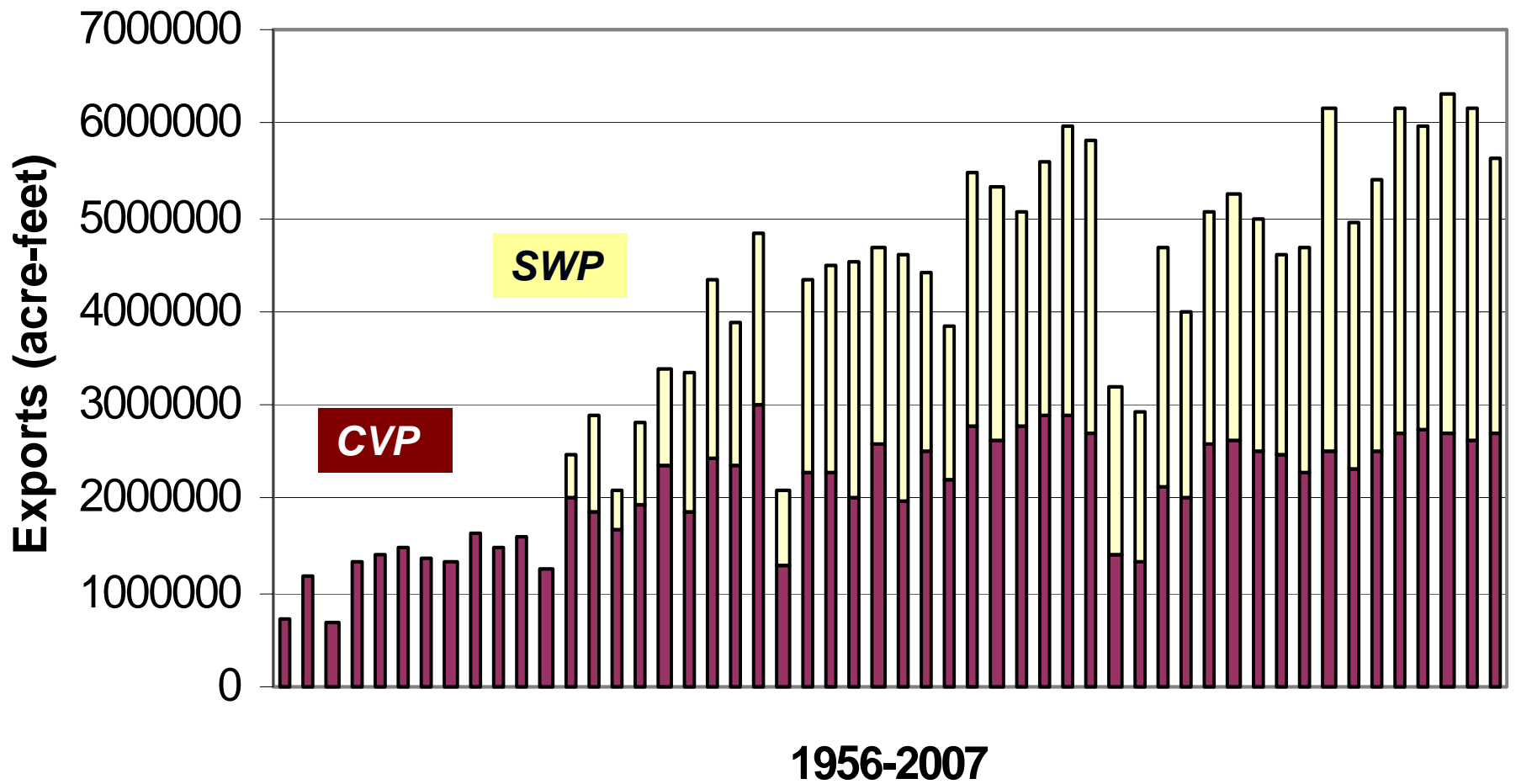
# What's the problem?

- Competing needs for water
  - Exports for urban and ag uses vs. in-stream needs
- Unreliable water supply
- Ecosystem degradation
- Drinking water quality degradation
- Levee vulnerability
- Climate change will exacerbate problems

## The Bay-Delta Watershed and Major Water Projects



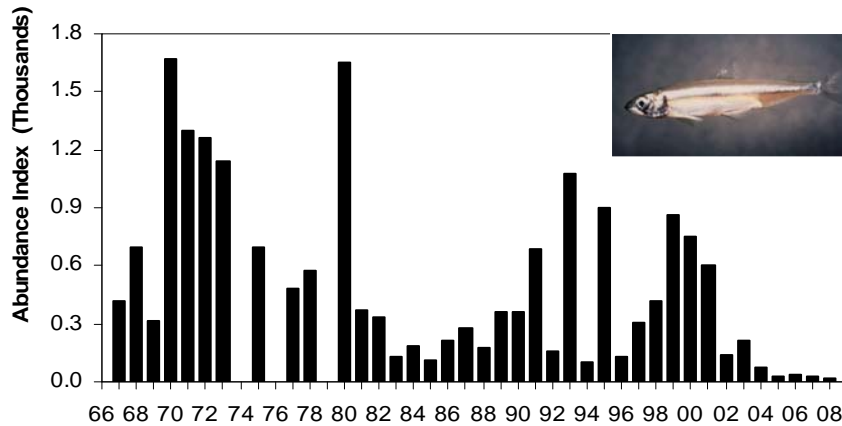




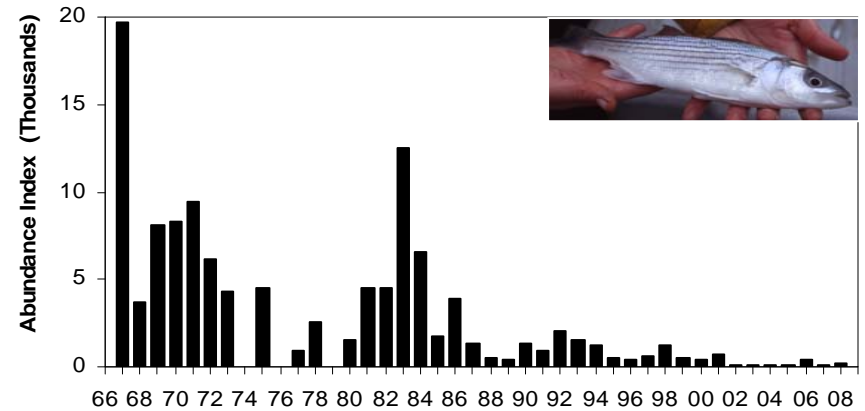
# Fall abundance in 2008 continued low for all POD fishes.

Source DFG 2008 Fall MW Trawl  
No sampling 1974 and 1979

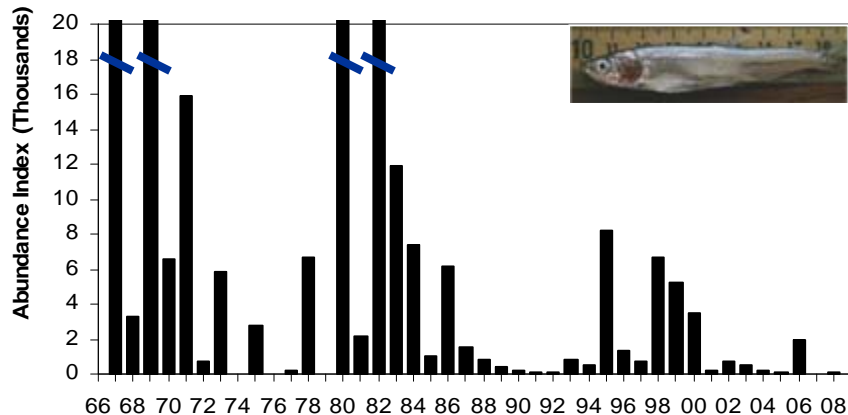
Delta Smelt



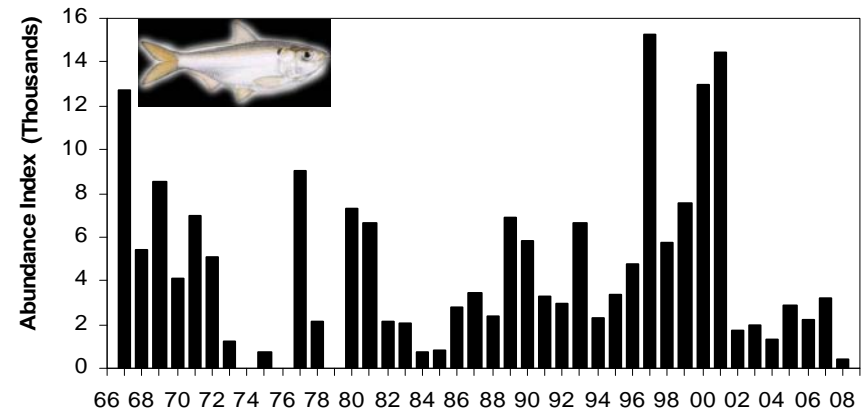
Striped Bass



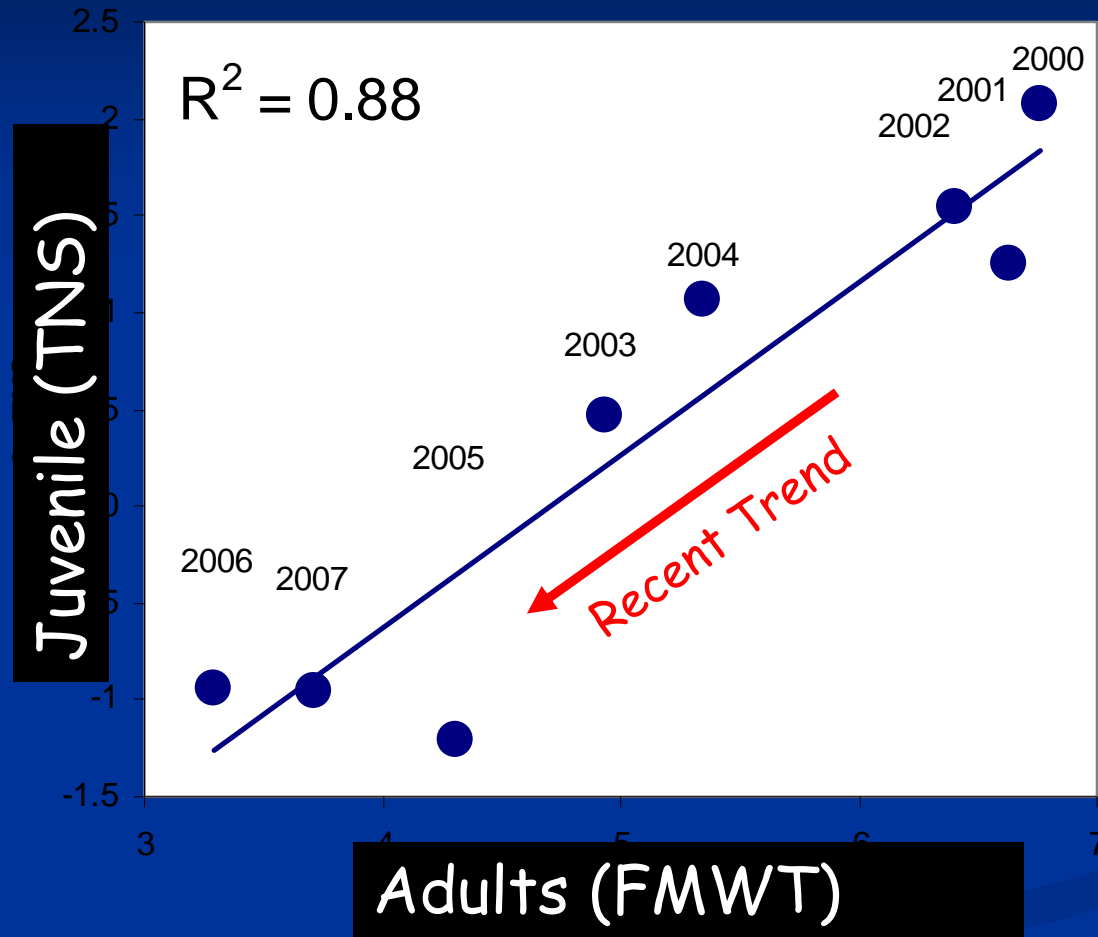
Longfin Smelt



Threadfin Shad



# Have Delta Smelt Dropped Below Critical Population Levels?



Source: Anke Mueller-Solger (DWR)



## TOP-DOWN

*Water  
Diversions*

*Predation*

Prior Fish  
Abundance

FISH  
ABUNDANCE

*Food  
availability*

*Food quality*

## BOTTOM-UP

## PHYSICAL & CHEMICAL FISH HABITAT

*Temperature  
Turbidity  
Salinity*

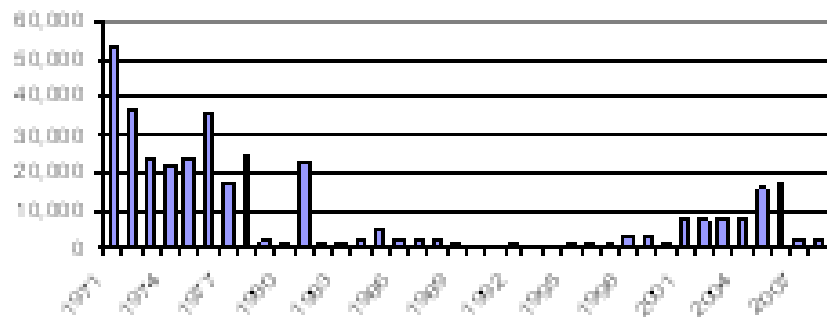
*Contaminants*

*Disease*

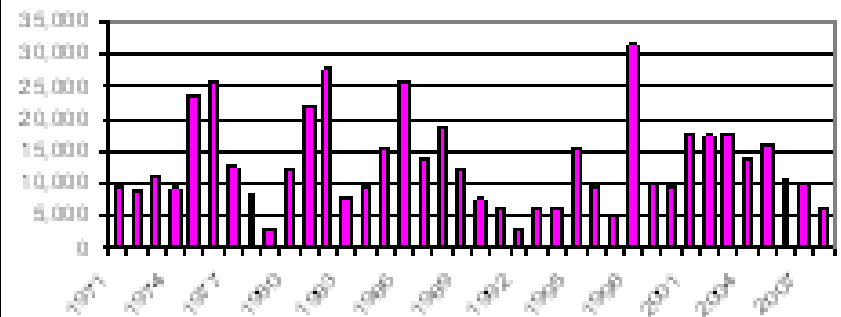
*Toxic algae  
SAV*

# Chinook Salmon

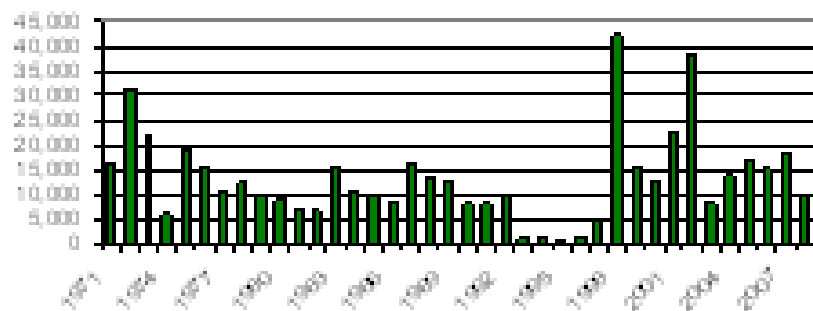
Winter run



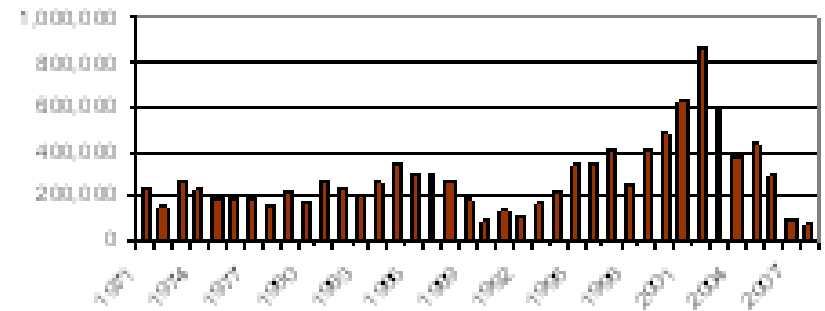
Spring run



Late-Fall Run



Fall Run



# Water quality issues

## Aquatic life issues

- Salinity/ flow
- Temperature
- Dissolved oxygen
- Pesticides
- Ammonia
- Selenium
- Invasive species

## Drinking Water

- DBP precursors
- Pathogens
- Nutrients

## Ag water

- Salinity

## Fish consumption

- Mercury

## Recreation

- Microcystis



# Drinking water

- Salt + Organic Carbon
- Vulnerability to levee failure



# Levee vulnerability

- Subsidence
- Earthquakes
- Floods
- Sea level rise





# Land Subsidence

Due to Farming & Peat Soil Oxidation

- 25 ft.

- 20 ft.

- 15 ft.

- 5 ft.

Below Sea Level

-30 -20 -10 -5 ft





# Climate change predictions

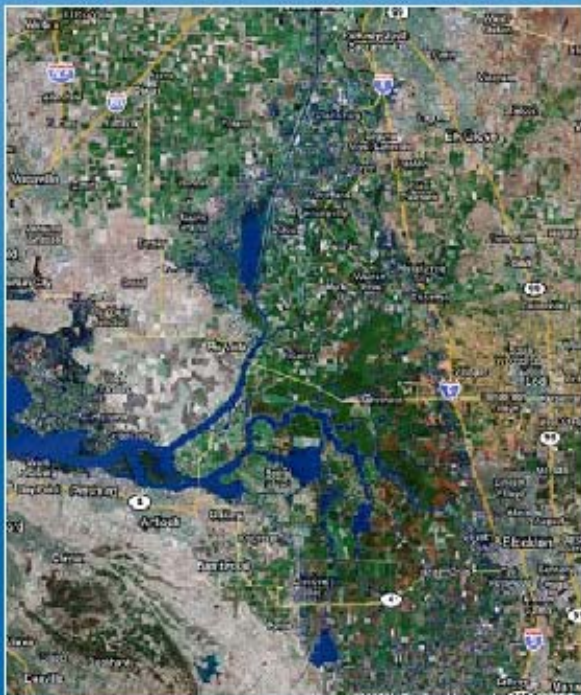
- Loss of snowpack
- Earlier runoff
- More dry years
- More floods
- Higher air and water temperatures
- Sea level rise





# California's Delta

Today



With 1 meter sea level rise



Source: Google Earth

# EPA's changing role in the Bay Delta



## 1970s – 1994

“It was the best of times. It was the worst of times”

- Water supply unreliable – drought, ESA listings
- Regulatory gridlock
- Bay Delta Accord

→ EPA as activist:

CEQ referral

WQS disapproval & promulgation

CCMP for the SF Estuary Project

Leadership on Bay Delta Accord

1995 – 2003

“From Rags to Riches”

- CalFed program developed
- ROD implementation begun
- State bonds
- California Bay Delta Authority created
- Federal authorization

→ EPA as facilitator:

OW AA led federal CalFed team

# 2004 – 2006

## “A Series of Unfortunate Events”

- pelagic organism decline
- CalFed finance plan unpopular
- State defunded CalFed program & ordered outside reviews
- Jones Tract levee break
- Katrina
- seismic studies
- climate change findings
- lawsuits
- drought

→ EPA as scientist



## 2006 – present

### “A Perfect Storm”

- Delta Vision completed
- BDCP underway
- 20 x 2020
- Scientific progress informs new BOs
- Water Board's Bay Delta Strategic Workplan
- San Joaquin River Restoration

→ EPA as cooperator...?

# Goals & Opportunities

## 1. Influence water management through:

- Supporting water conveyance around the Delta – a “peripheral canal” of appropriate size, location and operations, funded by beneficiaries
- Upgrading Delta water quality standards
- Supporting State’s Integrated Regional Water Management Program

# Goals & Opportunities

2. Address water quality problems through our regulatory and financial tools and technical assistance

- Support to Water Board and Fish agencies
- Seek cooperation from BOR & DWR
- Promote innovative agricultural practices
- Advance a Regional Monitoring Program

# Goals & Opportunities

## 3. Establish SF Estuary as authorized program

- Encompass SF Bay competitive grant program
- Clarify authority
- Provide institutional structure for future budgets

